

FILE 'HCAPLUS' ENTERED AT 09:19:20 ON 17 FEB 2010

L1	1344	S	BRANCHING ENZYME
L2	205564	S	STARCH OR AMYLOSE OR AMYLOPECTIN
L3	1001	S	L1 AND L2
L4	11449	S	GELATINIZED OR GELATINIZE OR GELATINIZATION
L5	30	S	L3 AND L4
L6	7	S	L5 AND (PY<2000 OR AY<2000 OR PRY<2000)

=> file hcaplus		
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	ENTRY	SESSION
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 USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Dec 2009

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the third quarter of 2009.

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This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s branching enzyme
      64397 BRANCHING
      923788 ENZYME
L1      1344 BRANCHING ENZYME
          (BRANCHING(W)ENZYME)

=> s starch or amylose or amylopectin
      198935 STARCH
      14623 AMYLOSE
      7901 AMYLOPECTIN
L2      205564 STARCH OR AMYLOSE OR AMYLOPECTIN

=> s l1 and l2 and l3
L3 NOT FOUND
The L-number entered could not be found. To see the definition
of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> s l1 and l2
L3      1001 L1 AND L2

=> s gelatinized or gelatinize or gelatinization
      4434 GELATINIZED
      661 GELATINIZE
      7380 GELATINIZATION
L4      11449 GELATINIZED OR GELATINIZE OR GELATINIZATION
```

=> s 13 and 14
L5 30 L3 AND L4

=> s 15 and (PY<2000 or AY<2000 or PRY<2000)
20131306 PY<2000
3716401 AY<2000
3180787 PRY<2000
L6 7 L5 AND (PY<2000 OR AY<2000 OR PRY<2000)

=> d 16 1-7 ti abs bib

L6 ANSWER 1 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN
TI Starch branching enzyme II (SBEII-1 and
SBEII-2) isoforms from wheat, cDNA, transgenic plants, and altering
starch properties for food use
AB A class of wheat SBEII genes, SBEII-1, recombinant protein expression in
transgenic plants, and its use in altering properties of starch
produced by a plant are claimed. Starch properties include the
gelatinization onset and/or peak temperature The use of such
starch with altered properties in food stuff, particularly bakery
products is also claimed. CDNA clones for SBEII were isolated and
sequenced. Those clones were divided into two sub-classes, SBEII-1 and
SBEII-2 having sequence homol. to maize SBEIIb and SBEIIa, resp. These
genes were mapped to the long arm of wheat group 2 homologous chromosomes.
Some of those isoforms were expressed as recombinant protein in wheat.
Differential scanning calorimetry studies showed that starch
produced in transgenic wheat transformed with expression construct for
SBEII displayed higher onset, peak, and end temperature for
gelatinization.
AN 2000:191230 HCAPLUS <<LOGINID::20100217>>
DN 132:247996
TI Starch branching enzyme II (SBEII-1 and
SBEII-2) isoforms from wheat, cDNA, transgenic plants, and altering
starch properties for food use
IN Goldsbrough, Andrew; Colliver, Steve
PA Plant Breeding International Cambridge Ltd., UK
SO PCT Int. Appl., 198 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	WO 2000015810	A1	20000323	WO 1999-GB3011	19990909 <--
	W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW				
	RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	AU 9958725	A	20000403	AU 1999-58725	19990909 <--
	AU 767103	B2	20031030		
	EP 1117814	A1	20010725	EP 1999-946307	19990909 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	HU 2001003618	A2	20020128	HU 2001-3618	19990909 <--
	HU 2001003618	A3	20031229		
	US 6730825	B1	20040504	US 2001-786480	20010917 <--

US 20040216188	A1	20041028	US 2004-818770	20040406 <--
US 7217857	B2	20070515		
US 20080064864	A1	20080313	US 2007-788837	20070419 <--
US 7465851	B2	20081216		
PRAI EP 1998-307337	A	19980910	<--	
WO 1999-GB3011	W	19990909	<--	
US 2001-786480	A3	20010917		
US 2004-818770	A3	20040406		

ASSIGNMENT HISTORY FOR US PATENT AVAILABLE IN LSUS DISPLAY FORMAT

OSC.G 3 THERE ARE 3 CAPLUS RECORDS THAT CITE THIS RECORD (3 CITINGS)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Consequences of antisense RNA inhibition of starch
branching enzyme activity on properties of potato
starch

AB Antisense constructs containing cDNAs for potato starch
branching enzyme (SBE) were introduced into potato
(*Solanum tuberosum* L.). A population of transgenic plants were generated
in which tuber SBE activity was reduced by between 5 and 98% of control
values. No significant differences in amylose content or
amylopectin branch length profiles of transgenic tuber starches
were observed as a function of tuber SBE activity. Starches obtained from
low SBE activity plants showed elevated phosphorus content. ³¹P-NMR anal.
showed that this was due to proportionate increases in both 3- and
6-linked starch phosphates. A consistent alteration in
starch gelatinization properties was only observed when the
level of SBE activity was reduced to below .apprx.5% of that of control
values. Starches from these low SBE activity plants showed increases of
up to 5°C in d.s.c. peak temperature and viscosity onset temperature Studies
on melting of crystallites obtained from linear (1 →
4)-α-D-glucan oligomers suggest that an average difference of double
helix length of about one glucose residue might be sufficient to account
for the observed differences in gelatinization properties. It is
postulated that the modification of gelatinization properties at
low SBE activities is due to a subtle alteration in amylopectin
branch patterns resulting in small changes in double helix lengths within
granules.

AN 1998:508745 HCAPLUS <<LOGINID::20100217>>

DN 129:214130

OREF 129:43447a,43450a

TI Consequences of antisense RNA inhibition of starch
branching enzyme activity on properties of potato
starch

AU Safford, Richard; Jobling, Steve A.; Sidebottom, Chris M.; Westcott, Roger
J.; Cooke, David; Tober, Karen J.; Strongitharm, Barbara H.; Russell,
Alison L.; Gidley, Michael J.

CS Biosciences Division, Unilever Research, Sharnbrook, MK 441LQ, UK

SO Carbohydrate Polymers (1998), 35(3-4), 155-168

CODEN: CAPOD8; ISSN: 0144-8617

PB Elsevier Science Ltd.

DT Journal

LA English

OSC.G 60 THERE ARE 60 CAPLUS RECORDS THAT CITE THIS RECORD (60 CITINGS)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Manufacture of gelatinized starch liquid with high
transparency

AB The title liquid, when incorporated into food-based oils or higher fatty acid alkali salts causing no discoloration and odor due to oxidative deterioration, is obtained from starch degradation products having >50% fraction with mol. weight range of 20,000-2,500,000, starch degradation products having DE (dextrin equiv) of 1-20, or starch degradation products having cyclic structure and mol. weight of 8000-800,000. Starch degradation products with cyclic structure can be formed by treating a starch compound or mixture with branching enzymes.

AN 1998:42073 HCAPLUS <<LOGINID::20100217>>

DN 128:129399

OREF 128:25397a,25400a

TI Manufacture of gelatinized starch liquid with high transparency

IN Nakamura, Hiroyasu; Hama, Yoshiaki; Okamoto, Harumi; Miyaki, Yasutomo

PA Ezaki Glico Co., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10008026	A	19980113	JP 1996-180061	19960619 <--
	JP 3025869	B2	20000327		
PRAI	JP 1996-180061		19960619	<--	

OSC.G 1 THERE ARE 1 CAPLUS RECORDS THAT CITE THIS RECORD (1 CITINGS)

L6 ANSWER 4 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Starch biosynthesis and modification of starch structure in transgenic plants

AB Starch is synthesized through the ADP-glucose pathway, involving the 3 enzymes ADP-glucose pyrophosphorylase, starch synthase, and starch-branching enzyme. ADP-glucose pyrophosphorylase is the key enzyme of the pathway, determining the flux of C into starch. It generates ADP-glucose, which is the substrate for the starch synthases, from glucose-1-phosphate and ATP releasing pyrophosphate. The enzyme is stimulated by 3-phosphoglycerate and inhibited through inorg. phosphate. The starch synthases, which catalyze the transfer of glucose from ADP-glucose to the nonreducing end of a growing α -1,4-glucan, are divided into 2 classes, the granule-bound starch synthases (GBSS) and the soluble starch synthases (SS). In both classes several isoforms were described from many different plant species. The branching enzyme, which introduces branch points into the amylopectin, can also occur in different isoforms. Other enzymes present in plants, which also act on α -1,4-glucans, such as the starch phosphorylases, disproportionating enzyme and different starch hydrolases, might also be important for determining the starch structure and, therefore, its processibility. Many aspects of starch synthesis are not fully understood to date. Starch metabolism can be manipulated through genetic engineering, either by the ectopic expression of different heterologous genes, or through the repression of the expression of endogenous genes using antisense RNA technol. This not only allows the functional anal. of starch biosynthetic proteins, but also the manipulation of starch structure in order to widen its industrial applications. In this way many different potato lines were generated, containing either different amts. of starch, or which synthesize a structurally modified starch. These structural changes relate to the amylose content, the phosphate content, or the gelatinization and gelation characteristics of the starch

AN 1997:568887 HCAPLUS <<LOGINID::20100217>>
 DN 127:261734
 OREF 127:51129a,51132a
 TI Starch biosynthesis and modification of starch
 structure in transgenic plants
 AU Kossmann, J.; Buttcher, V.; Abel, G. J. W.; Duwenig, E.; Emmermann, M.;
 Froberg, C.; Lloyd, J. R.; Lorberth, R.; Springer, F.; Welsh, T.;
 Willmitzer, L.
 CS Max-Planck-Institut Molekulare Pflanzenphysiologie, Golm, D-14476, Germany
 SO Macromolecular Symposia (1997), 120(Functional Polysaccharides
 II), 29-38
 CODEN: MSYMEC; ISSN: 1022-1360
 PB Huethig & Wepf
 DT Journal
 LA English

OSC.G 5 THERE ARE 5 CAPLUS RECORDS THAT CITE THIS RECORD (5 CITINGS)

L6 ANSWER 5 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN
 TI Physical association of starch biosynthetic enzymes with
 starch granules of maize endosperm. Granule-associated forms of
 starch synthase I and starch branching
 enzyme II
 AB Antibodies were used to probe the degree of association of starch
 biosynthetic enzymes with starch granules isolated from maize
 (Zea mays) endosperm. Graded washings of the starch granule,
 followed by release of polypeptides by gelatinization in 2%
 sodium dodecyl sulfate, enables distinction between strongly and loosely
 adherent proteins. Mild aqueous washing of granules resulted in near-complete
 solubilization of ADP-glucose pyrophosphorylase, indicating that little,
 if any, ADP-glucose pyrophosphorylase is granule associated In contrast, all
 of the waxy protein plus significant levels of starch synthase I
 and starch branching enzyme II (BEII)
 remained granule associated Stringent washings using protease and detergent
 demonstrated that the waxy protein, more than 85% of total endosperm
 starch synthase I protein, and more than 45% of BEII protein were
 strongly associated with starch granules. Rates of polypeptide
 accumulation within starch granules remained constant during
 endosperm development. Soluble and granule-derived forms of BEII yielded
 identical peptide maps and overlapping tryptic fragments closely aligned
 with deduced amino acid sequences from BEII cDNA clones. These
 observations provide direct evidence that BEII exists as both soluble and
 granule-associated entities. Thus, it is concluded that each of the known
 starch biosynthetic enzymes in maize endosperm exhibits a
 differential propensity to associate with, or to become irreversibly
 entrapped within, the starch granule.

AN 1996:436720 HCAPLUS <<LOGINID::20100217>>
 DN 125:81944
 OREF 125:15407a,15410a
 TI Physical association of starch biosynthetic enzymes with
 starch granules of maize endosperm. Granule-associated forms of
 starch synthase I and starch branching
 enzyme II
 AU Mu-Forster, Chen; Huang, Rongmin; Powers, Joseph R.; Harriman, Robert W.;
 Knight, Mary; Singletary, George W.; Keeling, Peter L.; Wasserman, Bruce
 P.
 CS Dep. Food Sci., Rutgers Univ., New Brunswick, NJ, 08903-0231, USA
 SO Plant Physiology (1996), 111(3), 821-829
 CODEN: PLPHAY; ISSN: 0032-0889
 PB American Society of Plant Physiologists
 DT Journal

LA English

OSC.G 82 THERE ARE 82 CAPLUS RECORDS THAT CITE THIS RECORD (82 CITINGS)

L6 ANSWER 6 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Mutant genes at the r and rb loci affect the structure and physico-chemical properties of pea seed starches

AB Mutant genes at two loci, r and rb, known to encode genes affecting the starch biosynthetic pathway, were studied for their effect on the structure and gelatinization of pea seed starches. Comparisons were made using starches from four lines (RRRbRb, rrRbRb, RRrbrb, and rrrbrb), near-isogenic except for genes at these two loci. All the starches had C-type x-ray diffraction patterns, but different contents of 'A' and 'B' polymorphs. The presence of a mutation at either locus increased the 'B' polymorph content in the starches, although the influence of the r mutation was much greater than that of rb. Differences were discovered in the crystalline structure of the rrRbRb starch which correlated with a high content of amorphous phase as well as with the changes in amylopectin structure. In addition, changes in the crystalline structure of this sample correlated with a lack of cooperative transition during starch gelatinization in excess water. The RRrbrb starch had a greatly increased enthalpy of gelatinization in excess water compared with the wild-type starch. It is proposed that this effect is connected with specific charge interactions between the mols. in the starch granule. The rrrbrb starch had parameters of crystalline structure and gelatinization which reflected the different influences of the two genes. With regard to gelatinization, this starch had relatively wide cooperative transition and low enthalpy and a very high peak temperature of transition.

AN 1996:55346 HCAPLUS <<LOGINID::20100217>>

DN 124:85197

OREF 124:16025a,16028a

TI Mutant genes at the r and rb loci affect the structure and physico-chemical properties of pea seed starches

AU Bogracheva, T. Ya.; Davydova, N. I.; Genin, Ya. V.; Hedley, C. L.

CS Inst. Biochem. Phys., RAS, Moscow, Russia

SO Journal of Experimental Botany (1995), 46(293), 1905-13

CODEN: JEBOA6; ISSN: 0022-0957

PB Oxford University Press

DT Journal

LA English

OSC.G 17 THERE ARE 17 CAPLUS RECORDS THAT CITE THIS RECORD (17 CITINGS)

L6 ANSWER 7 OF 7 HCAPLUS COPYRIGHT 2010 ACS on STN

TI Characterization of starch produced by suspension cell cultures of Indica rice (*Oryza sativa* L.)

AB Suspension cultures of rice (*O. sativa*), initiated from seed, produced significant amts. of starch. Starch accumulated in the cultured cells throughout the growth phase and reached a maximum of 7% of the cell dry weight at stationary phase. Starch was present in compound granules which were birefringent under polarized light. Suspension-culture starch had a higher amylose content and a lower gelatinization temperature than rice grain starch. Addnl., starch branching enzyme, an enzyme involved in starch biosynthesis, was characterized by anion exchange chromatog. in culture cells and endosperm. Culture cells had at least 1 major form of starch branching enzyme which differed from the multiple enzyme forms present in endosperm.

AN 1989:21211 HCAPLUS <<LOGINID::20100217>>

DN 110:21211

OREF 110:3565a,3568a

TI Characterization of starch produced by suspension cell cultures
of Indica rice (*Oryza sativa* L.)

AU Landry, Laurie G.; Smyth, D. A.

CS Tech. Cent., Gen. Foods Corp., Tarrytown, NY, 10591, USA

SO Plant Cell, Tissue and Organ Culture (1988), 15(1), 23-32
CODEN: PTCEDJ; ISSN: 0167-6857

DT Journal

LA English